

In the Claims

1. (currently amended) A nerve regeneration device comprising a polyhydroxyalkanoate polymer in the form of a porous conduit tube or sheet suitable for nerve repair, the pores in the conduit having a diameter of between five and 500 microns, wherein the polymer comprises 4-hydroxybutyrate.
2. (cancelled)
3. (original) The device of claim 2 wherein the polymer is poly-4-hydroxybutyrate.
4. (original) The device of claim 1 wherein the pores of the conduit are greater than 5 μ m in diameter.
5. (original) The device of claim 1 wherein the pores of the conduit are less than 500 μ m in diameter.
6. (original) The device of claim 1 wherein the conduit comprises a material selected from the group consisting of nerve cells, growth factors, and drugs.
7. (currently amended) A method for preparing a nerve regeneration device comprising a polyhydroxyalkanoate polymer in the form of a porous conduit tube or sheet wherein the polymer comprises 4-hydroxybutyrate and wherein the device is prepared by thermally induced phase separation of the polymer in a solvent in combination with salt particles, removing the polymer solvent, and removing the salt particles to form pores between five and five hundred microns in diameter.
8. (original) The method of claim 7 comprising leaching with an alcohol followed by leaching with water or a solution comprising a surfactant.

9. (original) The method of claim 7 for preparing the device of claim 1 wherein the device is prepared by a combination of thermally induced phase separation and poragen leaching.
10. (original) The method of claim 8 wherein the surfactant is a polysorbate
11. (currently amended) A method of nerve repair or regeneration comprising providing a nerve regeneration device comprising a polyhydroxyalkanoate 4-hydroxybutyrate polymer in the form of a wrapped porous conduit tube or sheet, the pores in the conduit having a diameter of between five and five hundred microns, wherein the diameter of the conduit is large enough so that it does not exert pressure on a regrowing nerve, but small enough to provide a good seal at the nerve.
12. (original) The method of claim 11 comprising inserting severed nerve ends into the conduit or wrapping the nerve ends with the polymer and sealing it into a conduit.
13. (original) The method of claim 12 wherein the device is sealed by application of heat.
14. (original) The method of claim 11 providing an axonal regeneration rate of at least 0.8 mm per day across a 10 mm sciatic nerve gap in an animal or human.